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# Secrets of the Past: An Introductory Lesson

# Badlands Earth History, Grades K-8

Students watch a six minute ranger video about the Badlands. Students create a "flip-book" by arranging the Badlands rock layer pages, ancient depositional environments, and fossilized animals in chronological order. Students gain an understanding and appreciation of Badlands Earth history by completing this lesson.

## **Objectives**

Students will be able to describe how the Badlands rock layers were deposited over time by ancient environments.

Students will match ancient environments and fossilized animals to the corrolating rock layer/time period in Earth's history.

Students will be able to describe how the modern processes of weathering and erosion shape the Badlands.

#### **National Science Standards**

K-4: Earth and Space Science: Content Standard D: As a result of their activities in grades K-4, all students should develop an understanding of properties of earth materials and changes in earth and sky.

5-8: Earth and Space Science: Content Standard D: As a result of their activities in grades 5-8, all students should develop an understanding of structure of the earth system and Earth's history.

#### South Dakota Science Standards

K.E.1.1; 1.E.1.2; 2.E.1.2; 3.L.3.4; 4.L.2.1; 5.L.3.1; 6.E.1.3; 7.L.3.1; 8.E.1.5

### Materials

Badlands in Your Classroom Secrets of the Past Video (6 minutes)

www.nps.gov/badl/photosmultimedia/badlands-in-your-classroom-videos.htm available for download at 84 MB, 44 MB, or 22 MB

Printable Student Pages (choose your grade level)

Scissors

Glue Sticks

**Colored Pencils** 

Stapler

#### **Procedure**

Have students watch the *Badlands in Your Classroom Secrets of the Past* Video (6 minutes). The video is available for download at <a href="www.nps.gov/badl/photosmultimedia/badlands-in-your-classroom-videos.htm">www.nps.gov/badl/photosmultimedia/badlands-in-your-classroom-videos.htm</a> (84 MB, 44 MB, 22 MB) Ranger Cindy uses a large flip-book and descriptive language to explain how the Badlands rock layers were formed.

#### Grades K-2

Have students color the K-2 printable pages as you discuss points from the video.

## Grades 3-5

Show and tell students that they are going to create their own flip book about the Badlands rock layers and fossils. Hand out materials.

Discuss each page in the book. Start with the Pierre Shale (the oldest layer). Remind students that the shale formed from the black mud left behind by an ancient sea. Repeat for each page in the book. Have students color layers (younger students) or take notes (older students) as you talk about each page.

Assemble flip books. Have students cut off each page at the dotted line. Have students glue the proper environment strip on the top portion of the page and then match fossilized animals that could be found in the time period reflected on the page. Assemble pages in order with the shortest page on top and the longest page on the bottom. Staple the flip book along the top edge. When complete, the pages will line up to reveal the entire Badlands rock column. Students can flip to any page to see the environment and fossilized animals from that time period.

When their flip books are complete, have students turn to a partner and tell the story of the Badlands in their own words.

## Grades 6-8

Have students take notes on the printable page as they watch the video. Have students conduct research projects about the Badlands layers and fossilized animals and report back to the class.

## Other Resources

These resources are available through Badlands National History Association (BNHA), a not-for-profit organization established to support education efforts at Badlands National Park. badlandsnha.org

- Fossils Tell of Long Ago by Aliki
- Geologic Time & the History of Life: Illustrated by Animals & Plants Poster
- Badlands: It's Life and Landscape by Joy Keve Hauk
- Badlands Suite: Land of Stone and Light, From Field to Lab, Multiple Perspectives DVD

Teachers participating in a ranger-led Badlands National Park Education Outreach Program receive a 15% discount on purchases from BNHA. Discount is valid from the time a program is scheduled to one month after the program. Please provide name, school, and discount code BIYC Education when you place your order at <u>badlandsnha.org</u>.